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## NOTES FROM PACIFIC COAST OBSERVATORIES.

### ORBITS OF THE BINARY STARS $\beta$ 101, $\beta$ 581, O $\Sigma$ 79, AND O $\Sigma$ 235.

BURNHAM's orbit of the binary star  $\beta$  101, computed in 1892 before the companion had passed periastron, is a very good approximation, the period and time of periastron passage, particularly, being very close to the truth. LOHSE's orbit, published in 1908, represents the recent observations somewhat better, but the residuals from my measures in 1911 and 1912 are still larger than can be accounted for wholly by errors of observation. I have therefore computed a new orbit, and have found elements which closely resemble LOHSE's, except for the period and time of periastron passage, which are almost identical with BURNHAM's values. This orbit represents all of the measures within the error of observation. The period of  $\beta$  101 is probably as precisely known as that of any binary. My elements, with the two other sets for comparison, are:—

	AITKEN.	LOHSE.	BURNHAM.
$P =$	23.34 years	23.48 years	23.3 years
$T =$	1892.60	1892.367	1892.7
$e =$	0.75	0.7575	0.68
$a =$	0".69	0".710	0".61
$\Omega =$	99°.7	98°.22	95°.6
$i =$	$\pm 79.8$	78.65	76.6
$\omega =$	74.65	73.33	73.6

Direct motion.

SEE's orbit for  $\beta$  581 does not represent my latest measures by 34°, and SCHOENBERG's is still more in error. A new orbit therefore seemed called for, especially as the companion passed periastron in 1909 and the observed angular motion during the last four years has been rapid. The new elements are:—

$$\begin{aligned}
 P &= 46.5 \text{ years} \\
 T &= 1909.40 \\
 e &= 0.40 \\
 a &= 0''.53 \\
 \Omega &= 116^\circ.5 \\
 i &= \pm 59.4 \\
 \omega &= 282.0 \\
 &\text{Direct motion}
 \end{aligned}$$

This binary pair is attended by a third star, nearly  $5''$  distant, which is a member of the system, the measures showing slow direct angular motion.

In an earlier number of these *Publications*,<sup>1</sup> I presented evidence which proved that the period of O $\Sigma$  79 was less than half as long as the value, 200 years, assigned by HUSSEY in the original orbit of this pair. The recent observations have defined the limits of the apparent ellipse still more closely and show that the period is not in excess of ninety years. My new elements are:—

$$\begin{aligned}
 P &= 88.9 \text{ years} \\
 T &= 1897.8 \\
 e &= 0.625 \\
 a &= 0''.57 \\
 \Omega &= 66^\circ.0 \\
 i &= \pm 56.2 \\
 \omega &= 129.8 \\
 &\text{Direct motion}
 \end{aligned}$$

The observed distances in this system are exceedingly discordant, and it is greatly to be desired that this co-ordinate be measured with special care in the next few years.

Comparison of my observations in 1905, 1907, and 1911 with the elements of O $\Sigma$  235 published by LOHSE in 1908 showed steadily increasing negative residuals in angle, amounting in 1911 to  $-23^\circ.7$ . HUSSEY's elements, published in 1901, gave still larger residuals. A new orbit was therefore computed, with the following results:—

<sup>1</sup> *Publications A. S. P.*, **21**, 83, 1909.

$$\begin{aligned}
 P &= 71.9 \text{ years} \\
 T &= 1909.0 \\
 e &= 0.40 \\
 a &= 0''.78 \\
 \Omega &= 78^\circ.5 \\
 i &= \pm 43.6 \\
 \omega &= 135.0 \\
 &\text{Direct motion}
 \end{aligned}$$

The details of these computations will appear later in the publications of the Lick Observatory. R. G. AITKEN.

May 8, 1912.

#### NEW MEMBERS OF LICK OBSERVATORY STAFF.

Mr. G. F. PADDOCK, who has been connected with the D. O. Mills expedition, Santiago, Chile, during the past five years as assistant and as assistant astronomer, has been appointed assistant in the Lick Observatory, with residence at Mount Hamilton, during the academic year 1912-13, with principal duties in stellar spectroscopy.

Mr. JOHN H. PITMAN, graduate of Swarthmore College, 1911, post-graduate student in the University of California in 1911-12, has been appointed Fellow in the Lick Observatory for the academic year 1912-13.

#### PERSONNEL OF THE D. O. MILLS EXPEDITION.

The members of the staff of the D. O. Mills expedition for the coming academic year is as follows: Dr. JOSEPH H. MOORE, acting astronomer in charge, Santiago, Chile; Mr. ROSCOE F. SANFORD, assistant, Santiago, Chile; Mrs. FREDRICA C. MOORE, assistant, Santiago, Chile; Miss A. M. HOBE, assistant, Mount Hamilton, California. The address of the expedition is Casilla 1219, Santiago, Chile.

#### MAGNITUDE ESTIMATES OF NOVA GEMINORUM.

The following magnitudes of *Nova Geminorum* were found by naked-eye comparison with neighboring stars. The stars used were:—

	H. R. Mag.
$\theta$ <i>Geminorum</i>	3.64
$\rho$ <i>Geminorum</i>	4.18
$\kappa$ <i>Geminorum</i>	3.68
H. R. 2896	5.34

G. M. T.		Mag. of <i>Nova</i> .
1912 March	13.646	3.9
	14.632	3.5
	15.646	4.6
	16.771	5.2
	18.792	5.1
	19.750	5.3
	20.688	5.3
	21.667	5.3
	23.667	4.8

The observations were made in Berkeley, California.

PAUL W. MERRILL.

May, 1912.